

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims (deleted text being struck through and added text being underlined):

- 1 1. (Previously Amended) An adapter for converting a hammer
- 2 tool into a multiple-impact object driving tool, the hammer tool
- 3 having a housing with a barrel portion including a rear section and a
- 4 nose section, a passage extending through the barrel portion with an
- 5 opening in the nose section extending into the passage, the hammer
- 6 tool having a reciprocating impact member being positioned in the
- 7 passage, the adapter comprising:
- 8 a shroud for removably mounting on a hammer tool, the shroud
- 9 having a forward end and a rearward end, a bore being formed
- 10 through the upper shroud between the forward and rearward
- 11 ends, the shroud having a rear portion located at the rearward
- 12 end of the shroud for removably receiving a portion of the
- 13 hammer device, the shroud having a front portion located
- 14 forward of the rear portion;
- 15 a drive punch positioned in the bore of the shroud with a rear
- 16 section for being impacted by the reciprocating impact
- 17 member of the hammer tool and a forward end for impacting
- 18 an object to be driven; and
- 19 a guide bushing extending forwardly from the shroud, the guide
- 20 bushing having a forward end and a rearward end, a channel
- 21 extending through the guide bushing between the forward and
- 22 rearward ends for receiving a portion of the object to be
- 23 driven, the guide bushing being slidably mounted on the front
- 24 portion of the shroud such that the guide bushing is movable
- 25 between an extended position and a retracted position;

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Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

26 wherein the channel of the guide bushing has a substantially
27 uniform diameter along a length of the guide bushing.

1 3. (Previously Amended) The adapter of claim 1 additionally
2 comprising an annular groove formed in an interior surface of the
3 bore of the shroud, and a securing ring removably mounted in
4 annular groove in the bore for holding the securing ring in a
5 stationary position on the shroud.

1 4. (Original) The adapter of claim 1 additionally comprising
2 a biasing means for biasing the guide bushing into an extended
3 position with respect to the shroud.

1 7. (Original) The adapter of claim 1 wherein the shroud has
2 an outer surface, the outer surface of the shroud having a
3 substantially cylindrical front part, a substantially frusta-conical
4 intermediate part, and a substantially cylindrical rear part, a
5 diameter of the rear part of the outer surface being relatively larger
6 than a diameter of the front part of the outer surface.

1 8. (Previously Amended) An adapter for converting a hammer
2 tool into a multiple-impact object driving tool, the hammer tool
3 having a housing with a barrel portion including a rear section and a
4 nose section, a passage extending through the barrel portion with an
5 opening in the nose section extending into the passage, the hammer
6 tool having a reciprocating impact member being positioned in the
7 passage, the adapter comprising:
8 a shroud for removably mounting on a hammer tool, the shroud
9 having a forward end and a rearward end, a bore being formed
10 through the upper shroud between the forward and rearward
11 ends, the shroud having a rear portion located at the rearward
12 end of the shroud for removably receiving a portion of the

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

13 hammer device, the shroud having a front portion located
14 forward of the rear portion;
15 a drive punch positioned in the bore of the shroud with a rear
16 section for being impacted by the reciprocating impact
17 member of the hammer tool and a forward end for impacting
18 an object to be driven;
19 a guide bushing extending forwardly from the shroud, the guide
20 bushing having a forward end and a rearward end, a channel
21 extending through the guide bushing between the forward and
22 rearward ends for receiving a portion of the object to be
23 driven, the guide bushing being slidably mounted on the front
24 portion of the shroud such that the guide bushing is movable
25 between an extended position and a retracted position; and
26 a muffling means for muffling noise and vibration mounted on the
27 shroud for mounting on the hammer tool with the shroud and
28 removal from the hammer tool with the shroud;
29 wherein the muffling means comprises a muffler member mounted
30 on the rear portion of the shroud, the muffler member having a
31 bore in communication with the bore of the shroud, an annular
32 space being formed about the bore of the muffler member for
33 extending about a barrel portion of the hammer tool when the
34 shroud is mounted on the hammer tool, and a muffling material
35 for absorbing vibration being positioned in the annular space
36 for extending about the barrel portion when the shroud is
37 mounted on the hammer tool.

1 9. (Cancelled) The adapter of claim 8 wherein the muffling
2 means comprising a muffler member mounted on the rear portion of
3 the shroud, the muffler member having a bore in communication
4 with the bore of the shroud, an annular space being formed about
5 the bore of the muffler member for extending about a barrel portion

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

6 of the hammer tool when the shroud is mounted on the hammer tool,
7 and a muffling material for absorbing vibration being positioned in
8 the annular space for extending about the barrel portion when the
9 shroud is mounted on the hammer tool.

1 10. (Original) The adapter of claim 1 additionally comprising
2 a magnetic member mounted on the guide bushing for facilitating
3 holding of an object to be driven in the guide bushing.

1 11. (Original) The adapter of claim 1 wherein the rear portion
2 of the shroud includes retaining means for retaining the shroud on
3 the nose of the hammer tool.

1 12. (Original) The adapter of claim 11 wherein the retaining
2 means includes:

3 a longitudinal slit formed in the rear portion of the shroud and
4 extending from the rearward end of the shroud toward the forward
5 end; and

6 a pair of retaining tabs, each of the retaining tabs being
7 mounted on the rear portion on a side of the longitudinal slit such
8 that the retaining tabs are located on opposite sides of the
9 longitudinal slit; and

10 a fastener for constricting the longitudinal slit by pulling the
11 retaining tabs toward each other.

1 13. (Original) The adapter of claim 11 wherein the retaining
2 means includes:

3 a recess formed in the rear portion of the shroud, the recess
4 extending between the bore of the shroud and an exterior of the
5 shroud;

6 a locking ball positioned in the recess and being movable in
7 the recess between a locked position in which the locking ball

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

8 extends into the bore for engaging an exterior of a nose section of
9 the hammer tool, and an unlocked position in which the locking ball
10 is substantially completely retracted into the recess;

11 a lever movably positioned in the recess, the lever having a
12 locked position in which the lever presses the locking ball into the
13 locked position and an unlocked position in which the lever permits
14 the locking ball to retract into the recess.

1 14. (Previously Amended) The adapter of claim 1 wherein an
2 interior surface of the bore at the rear portion has interior threads
3 formed thereon for threadedly engaging a helical groove on an
4 exterior of a nose of the barrel portion of the hammer tool provided
5 for accepting a retainer spring, and wherein peaks of the interior
6 threads are semicircular in cross-section for engaging the helical
7 groove on the hammer tool.

1 15. (Previously Amended) An adapter for converting a
2 hammer tool into a multiple-impact object driving tool, the hammer
3 tool having a housing with a barrel portion including a rear section
4 and a nose section, a passage extending through the barrel portion
5 with an opening in the nose section extending into the passage, the
6 hammer tool having a reciprocating impact member being positioned
7 in the passage, the adapter comprising:

8 a shroud for removably mounting on a hammer tool, the shroud
9 having a forward end and a rearward end, a bore being formed
10 through the upper shroud between the forward and rearward
11 ends, the shroud having a rear portion located at the rearward
12 end of the shroud for removably receiving a portion of the
13 hammer device, the shroud having a front portion located
14 forward of the rear portion;

15 a drive punch positioned in the bore of the shroud with a rear

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

16 section for being impacted by the reciprocating impact
17 member of the hammer tool and a forward end for impacting
18 an object to be driven;
19 a guide bushing extending forwardly from the shroud, the guide
20 bushing having a forward end and a rearward end, a channel
21 extending through the guide bushing between the forward and
22 rearward ends for receiving a portion of the object to be
23 driven, the guide bushing being slidably mounted on the front
24 portion of the shroud such that the guide bushing is movable
25 between an extended position and a retracted position; and
26 an extender assembly removably mounted on the shroud, the
27 extender assembly including a collar extending about the
28 shroud and an extender member pivotally mounted on the
29 collar and extending forwardly past the forward end of the
30 shroud and the forward end of the guide bushing, a foremost
31 end of the extender member having a forked configuration for
32 receiving a portion of a fastener to position the fastener as it
33 extends into the channel of the guide bushing.

1 16. (Original) The adapter of claim 15 wherein the extender
2 member comprises has two telescopic portions permitting adjustment
3 of the amount of forward extension of the foremost end of the
4 extender member.

1 17. (Original) A multiple impact object driving system
2 comprising:
3 a hammer tool for impacting an object, the hammer tool having a
4 housing, the housing including a handle portion and a barrel
5 portion mounted on the handle portion, the barrel portion
6 having a rear section and a nose section, an outer surface of
7 the nose section having a plurality of mounting threads, a

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

8 passage extending through the barrel portion, an opening in
9 the nose section extending into the passage, a reciprocating
10 impact member being positioned in the passage; and
11 an adapter for converting a hammer tool into a multiple-impact
12 object driving tool, the adapter being adapted for holding an
13 object during the multiple impacts, the adapter comprising:
14 a shroud for removably mounting on the nose of the hammer tool,
15 the shroud having a forward end and a rearward end, a bore
16 being formed through the upper shroud between the forward
17 and rearward ends;
18 the shroud having a rear portion removably mounted on the
19 nose of the hammer device, the rear portion being
20 located at the rearward end of the shroud, an interior
21 surface of the bore at the rear portion having interior
22 threads formed thereon for threadedly engaging
23 exterior threads on the nose of the hammer tool;
24 an annular interior shoulder being formed in the bore of
25 the rear portion of the shroud;
26 the shroud having a front portion located forward of the
27 rear portion and at the forward end of the shroud;
28 a lip formed on the shroud and extending inwardly into
29 the bore, the lip being located adjacent to the
30 forward end of the front portion of the shroud;
31 a guide bushing extending forwardly from the shroud, the guide
32 bushing being slidably mounted on the front portion of the
33 shroud, the guide bushing having a forward end and a
34 rearward end, a channel extending through the guide
35 bushing between the forward and rearward ends;
36 an annular flange on the guide bushing for retaining the guide
37 bushing on the shroud, the annular flange being mounted

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

38 on the rearward end of the guide bushing, the annular
39 flange extending radially outward from the guide
40 bushing;
41 a securing ring removably mounted in the bore, the securing ring
42 being positioned in the bore substantially adjacent to a
43 junction of the front and rear portions of the shroud, an
44 annular groove formed in an interior surface of the bore for
45 receiving the securing ring in a manner preventing
46 movement of the securing ring in the bore, the securing
47 ring having an interior perimeter relatively smaller than a
48 diameter of the bore in the shroud;
49 a ring member being positioned in the bore adjacent to the
50 annular interior shoulder of the rear portion for abutting
51 the nose section of the hammer tool;
52 a biasing means for biasing the guide bushing into an extended
53 position with respect to the shroud, the biasing means
54 comprising a compression spring positioned in the bore, the
55 compression spring being located between the securing ring
56 and the guide bushing for pushing the guide bushing away
57 from the securing ring;
58 a drive punch positioned in the bore of the shroud, the drive
59 punch having a rear section for being impacted by the
60 reciprocating impact member of the hammer tool, the drive
61 punch having a front section with a forward end for
62 impacting an object to be driven, an annular punch flange
63 extending radially outwardly from the drive punch, the
64 punch flange being positioned generally between the front
65 and rear sections of the drive punch, the punch flange being
66 positioned adjacent to the securing ring;
67 wherein the shroud has an outer surface, the outer surface of

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

68 the shroud having a substantially cylindrical front part,
69 a substantially frusta-conical intermediate part, and a
70 substantially cylindrical rear part, a diameter of the rear
71 part of the outer surface being relatively larger than a
72 diameter of the front part of the outer surface;
73 a muffling means for muffling noise and vibration, the muffling
74 means comprising a muffler member mounted on the rear
75 portion of the shroud, the muffler member having a bore in
76 communication with the bore of the shroud, an annular
77 space being formed about the bore of the muffler member,
78 and a muffling material positioned in the annular space for
79 absorbing vibration;
80 a magnetic member mounted on the guide bushing for facilitating
81 holding of an object to be driven in the bushing, the
82 magnetic member being located toward a front end of the
83 guide bushing; and
84 retaining means on the rear portion of the shroud for retaining
85 the shroud on the nose of the hammer tool.

1 20. (Previously Added) The adapter of claim 1 wherein the
2 uniform diameter of the channel of the guide bushing is slightly
3 larger than a diameter of the forward end of the drive punch.

1 21. (Previously Added) The adapter of claim 1 wherein the
2 shroud and the slidable guide bushing have an overall length, a
3 length of the slidable guide bushing comprising approximately one-
4 third of the overall length of the shroud and guide bushing.

1 22. (Previously Added) The adapter of claim 1 wherein the
2 forward end of the drive punch terminates at a forwardmost end of
3 the front portion of the shroud.

Appln. No. 09/944,009
Amendment dated July 10, 2003
Reply to Office Action mailed 5/21/03

1 23. (Previously Added) The adapter of claim 1 wherein the
2 forward end of the drive punch extends into the channel of the guide
3 bushing when the slidable guide bushing is fully extended from the
4 shroud.

1 24. (Previously Added) The adapter of claim 15 wherein the
2 forked configuration of the foremost end of the extender member
3 includes a pair of converging edges in a concave configuration.

1 25. (Currently Amended) The adapter of claim 17 wherein
2 the channel of the guide bushing has a substantially uniform
3 diameter along a length of the guide bushing;

4 wherein the uniform diameter of the channel of the guide
5 bushing is slightly larger than a diameter of the forward end of the
6 drive punch;

7 wherein the shroud and the slidable guide bushing have an
8 overall length, a length of the slidable guide bushing comprising
9 approximately one-third of the overall length of the shroud and
10 guide bushing;

11 wherein the forward end of the drive punch terminates at a
12 forwardmost end of the front portion of the shroud;

13 wherein the forward end of the drive punch extends into the
14 channel of the guide bushing when the slidable guide bushing is
15 fully extended from the shroud ; and

16 ~~wherein the forked configuration of the foremost end of the~~
17 ~~extender member includes a pair of converging edges in a concave~~
18 ~~configuration.~~